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## **EUROPEAN PATENT APPLICATION**

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- (71) Applicant: HARRIS CORPORATION Melbourne, FL 32919 (US)

- (51) Int CI.6: **H01L 29/78**, H01L 29/423, H01L 21/336, H01L 29/739, H01L 29/74
- (72) Inventor: Beasom, James D. Melbourne, Florida 32904 (US)
- (74) Representative: Kopacz, William James 83, Avenue Foch 75116 Paris (FR)
- (54) Improved trench MOS gate device and method of producing the same
- (57) A trench MOS gate device that comprises a trench whose floor and sidewalls include layers of dielectric material, having a controlled thickness dimension. These thickness dimensions are related by a controlled floor:sidewall layer thickness ratio, which is established by individually controlling the thickness of each of the floor and sidewall dielectric layers. This floor to sidewall layer thickness ratio is at least 1 to 1, and preferably at least 1.2 to 1. A process for forming a

trench MOS gate device comprises etching a trench in a silicon device wafer and forming layers of dielectric material on the trench floor and on the sidewalls, each layer having a controlled thickness dimension, related by a controlled floor to sidewall layer thickness ratio that is preferably at least 1 to 1. When silicon dioxide is employed as the dielectric material, the layers preferably comprise a composite of thermally grown and deposited silicon dioxide.

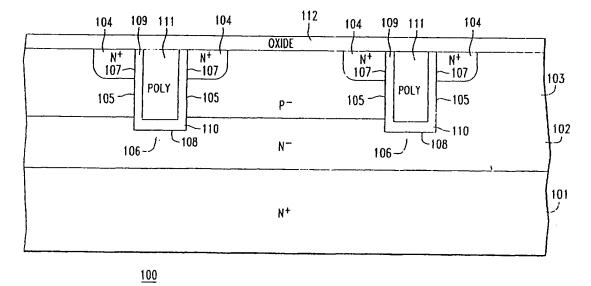


FIG. 1



## EUROPEAN SEARCH REPORT

Application Number EP 97 40 0624

~at=	Citation of document with in-	fication where appropriate	Relevant	G1 4 G G1 G	
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	The present search report has been	en drawn up for all claims			
	Place of search	Date of completion of the search		Examiner	
1	THE HAGUE	5 August 1998	Minx	oun, B	
X particu Y : particu docum	EGORY OF CITED DOCUMENTS ylarly relevant if taken alone ularly relevant if combined with another ent of the same category logical background ritten disclosure	T: theory or principle E: earlier patent docu- after the filing date D: document cited in L: document cited for	underlying the in- ment, but publish the application other reasons	vention ned on, oi	

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